Van Vleck Notes

Spring 2010 Edition

The newsletter of the University of Wisconsin Math Department

From the Editor

This edition of Van Vleck Notes again covers only a fraction of the events which occurred last year in the Math Department. Overall, there have been many changes in recent years, mainly due to the retirements of the many faculty members who shaped the Department in the past. We are lucky to see many new faces: three new tenure-track Assistant Professors, several Van Vleck Assistant Professors and new graduate students. This is happening despite the state's fiscal crisis, furloughs, and the dire economic situation all over the world. Although there have been many changes, our best traditions are preserved: i.e., there were interesting lecture series, conferences were organized, and the seminars were actively running as usual.

This year the University Hilldale lecture was very special: **Persi Diaconis** of Stanford University delivered the lecture in his uniquely entertaining style, complete with card shuffling tricks and magic. The lecture room was crowded, questions were asked, and the reception party after the talk was very entertaining. You can read more about the faculty and student awards, promotions, retirements, etc. We hope that this issue will keep you informed about the life of our Department and remember: you are always welcome to Van Vleck Hall and to our annual UW-Madison Reunion at AMS Joint Mathematics Meetings.

Serguei Denissov

Inside

From the Chair

Dear friends:

I am very happy to have this opportunity to share with you some recent news about the department of mathematics at UW-Madison.

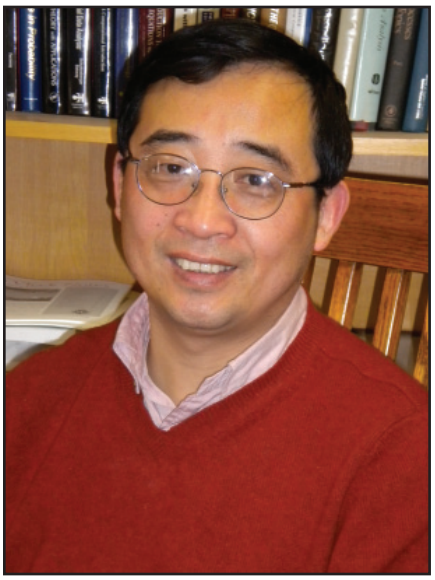
Despite the toughest economic situation we have seen in decades and the budget cuts and furloughs that we have endured, the department continues to succeed in attracting new blood. In the past year, we hired three excellent young assistant professors: **David Anderson**, Ph.D. from Duke, and formerly a Van Vleck Assistant Professor at UW, has research interests in probability theory, numerical analysis and scientific computing, and mathematical/systems biology; **Laurentiu Maxim**, PhD from UPenn, formerly an assistant professor at City University of New York, works on algebraic topology and algebraic geometry; **Sam Stechmann**, Ph.D. from NYU, an applied mathematician working in atmospherical sciences, who currently holds an NSF Mathematical Sciences Postdoctoral Fellowship and a NOAA Climate and Global Change Postdoctoral Fellowship at UCLA. In this issue of Van Vleck Notes we will read the stories of Anderson, Maxim, and Stechmann. What is more exciting is that, at the very moment of my writing this letter, we are busy filling several new positions, at a time when most of the other universities have hiring freezes. We are confident that we will be able to recruit some of the strongest job applicants in this year's market, whom you will meet in next year's Van Vleck Notes.

This past year several new Van Vleck Assistant Professors also joined us: **Alexander Fish**, Ph.D. from Hebrew University in Israel, conducts research in ergodic theory and dynamical systems; **Sukhendu Mehrotra**, an algebraic geometer, received his Ph.D. from UPenn; **Keng Meng Ng** is a logician from Victoria University of Wellington, New Zealand; and analyst **Brian Street** who received his Ph.D. from Princeton.

Our faculty received some notable international honors including the ICM Invited Lecture by **Fedor Nazarov** and an honorary degree from Madrid's Complutense University granted to **Paul Rabinowitz**.

In spite of this good news, we are not immune from the global economic crisis. This is certainly not the best time to be a chair. Your continued support will be a tremendous boost to us more than ever. Any contribution, be it in the form of endowed chair professorships to help us to recruit and retain star faculty, or scholarships to help our undergraduate and graduate students, will be highly appreciated.

I had the pleasure of meeting some of you at the Wisconsin Alumni Reunion at the AMS Annual meeting in San Francisco this last January. I would like to remind you of the upcoming reunion next January in New Orleans. In addition, if by chance you happen to visit Madison, please stop by Van Vleck Hall and



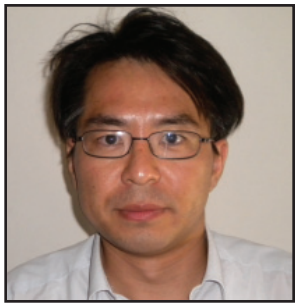
I will be very happy to meet you. Wherever you are, you are always a Badger, as best described by the following poem by the great Indian play writer Kalidasa in his renowned classical Sanskrit "Sakuntala"

When evening comes,
the shadow of the tree
Is cast far forward,
yet does not depart;
Even so, wheresoe'er you be,
The thought of you
can never leave my heart

Sincerely,
Shi Jin
Chair

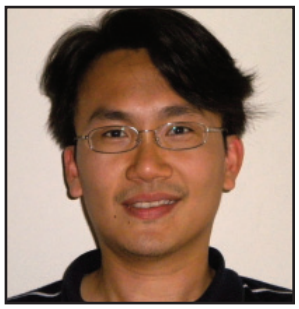
Van Vleck Visiting Assistant Professors

Alexander Fish received his PhD in 2006 from the Hebrew University in Israel where he was a student of Hillel Furstenberg. His main area of research is Ergodic theory and Dynamical systems. After graduation, Alexander spent three years at Ohio State as Zassenhaus Assistant Professor. Fish came to UW in the fall of 2009 and is planning to collaborate with both the Analysis and Number Theory groups.



Boguk Kim came to UW from MIT where he received his PhD in Applied Math under the supervision of Professor Akylas from the Department of Mechanical Engineering. He then visited New Jersey Institute of Technology and Seoul National University. Boguk's appointment is Visiting Assistant Professor and is for one year. He will interact with the Applied Math group and will study numerical modeling of nonlinear dispersive equations of three-dimensional fluids mechanics.

Sukhendu Mehrotra received his PhD from the University of Pennsylvania in May 2005 where his advisor was Tony Pantev. After that, he held many visiting positions in US, Europe, and India: University of Sheffield, University of Massachusetts-Amherst, Tata Institute of Fundamental Research. His main research interests are algebraic geometry, homological algebra and string theory. More specifically, Sukhendu works on derived categories of coherent sheaves on algebraic varieties.



Keng Meng "Selwyn" Ng's appointment at UW started in the fall 2009. He was a student of Professor Downey at Victoria University of Wellington, New Zealand where he got his PhD in summer 2009. Selwyn is a logician working on algorithmic randomness and its application to classical computability theory. Here at UW, he will collaborate with J. Miller and Lempp.

Brian Street joined UW in the fall 2009. His position will be partially supported by an NSF postdoctoral fellowship. Brian was a student of Elias Stein at Princeton and got his PhD in 2007. Before coming to Madison, he was Coxeter Assistant Professor at University of Toronto. Brian is working on some problems in singular integrals but is also interested in several complex variables, and regularity problems of linear PDEs. His mentor at UW will be Alex Nagel.

New Faculty

David Anderson. David got his BS from the University of Virginia (2000) and his MS in Mathematics from Duke (2001). He continued at Duke and received his PhD in 2005 under the supervision of Michael Reed and Jonathan Mattingly. After his graduation, David spent one year at Duke as Research Associate and then started a position at UW as Van Vleck Assistant Professor under the guidance of Tom Kurtz in 2007. He now continues here at UW as a tenure-track Assistant Professor. David's interests are very broad: he is working on probability and stochastic processes, scientific computing, numerical analysis, and nonlinear dynamical systems. Anderson is a very active researcher with many collaborators working in different fields (math biology, applied math, etc.), he also plays an active role in the Department's life, e.g., David was involved in developing a new course in Math Biology.

Laurentiu Maxim. Laurentiu is a new tenure-track Assistant Professor working in Singularity Theory, which is a blend of Algebraic Topology and Algebraic Geometry. He got his BS and MS degrees from the University of Bucharest (1997 and 1999, respectively). Then, he continued as a graduate student at the University of Pennsylvania where his thesis advisor was Julius Shaneson. Maxim received his PhD in 2005. After his graduation, he held postdoctoral positions at the University of Illinois at Chicago and NYU, and a tenure-track assistant professor position at CUNY. Laurentiu already has many publications in the leading mathematical journals. His research is focused on the Topology of Hypersurface Singularities, Hodge Theory, Characteristic Classes of Singular Spaces, and some other important aspects of Singularity Theory.

Samuel Stechmann. Sam has a very diverse background: BA in Chemistry, BS in Physics, and BA in Mathematics all in 2003 from the University of St. Thomas. Then, he moved to NYU to work with Majda and received his PhD in 2008. His research interests are in Fluid dynamics, PDEs, and numerical methods. The problems he considered involved atmospheric science, convection and clouds, tropical weather and climate. His research was supported by an NSF postdoctoral fellowship and Department of Energy fellowship. Sam will join UW in the fall of 2010 after finishing his postdoctoral position at UCLA.

Faculty Promotions

Promotion to Professor

Jeff Viaclovsky. Jeff received his bachelor degrees in Math and in Physics at the University of Texas, Austin in 1994 and then his PhD at Princeton (1999) under the supervision of Phillip Griffiths. After spending a year at Texas as R.H. Bing Instructor, he started a position at MIT first as Moore Instructor (1999-2002) and then as Assistant (2002-2006) and Associate (2006-2007) Professor. Jeff then moved to Madison in 2007 as an Associate Professor and was promoted to Professor in 2009. Viaclovsky made spectacular contributions in Differential Geometry and PDEs and his research was distinguished by numerous awards: NSF Postdoctoral Research Fellowship (1999-2002), Alfred P. Sloan Research Fellowship (2004-06), several NSF grants, just to name a few.

Promotion to Associate Professor

Julie Mitchell. Julie received her Bachelor degree in Math from San Jose State University in 1992 and her PhD from UC Berkeley in 1998. After five years in a postdoctoral position at UC San Diego, she joined UW in 2003 as a part of cluster hiring: her position was 50% in Math and 50% in Biochemistry. Julie's contribution to the life of the University is outstanding. She is the Director of the BACTER Institute and is also a trainer for many programs at UW, e.g., Computation and Informatics in Biology and Medicine, Undergraduate Research Program. Mitchell developed new courses in mathematical biology and they are very popular among students. Her research involves applications of various mathematical methods in understanding problems in biology such as: molecular structure, predicting protein interactions, etc. The significant part of her research is focused on developing fast and reliable software needed for solving problems in biology and medicine. Julie's research has been recognized by many awards: e.g., Sloan Research Fellowship in Molecular Biology (2006-2008), Vilas Associates Award (2007).

Awards

Fedor Nazarov is an Invited Speaker at the International Congress on Mathematicians (2010, Hyderabad). Nazarov's research is mainly in Harmonic Analysis but he also has made spectacular contributions to many other fields: Probability, Convex Geometry, Partial Differential Equations. The ICM is the most important event in Mathematics and being an invited speaker is a sign of high recognition by international mathematical community.

Paul Rabinowitz received an honorary degree from Madrid's Complutense University. Paul is known worldwide for his contributions to nonlinear analysis and PDE. Many of his results became classical and can be found in the textbooks that some of us (including the editor of these notes) used when we were (under)graduate students.

Richard Askey, Carl de Boor, Seymour Parter, and **Paul Rabinowitz** have been named as SIAM fellows.

David Griffeath was the recipient of a 2009 Phi Beta Kappa teaching award. The ceremony took place at the 109th annual Phi Beta Kappa meeting.

Gloria Mari Beffa was awarded the Letters and Science Faculty Advising Award for 2007-08. The award is granted to one faculty advisor in the College of Letters and Science each year in recognition of outstanding performance and professionalism in advising L&S students.

The Math Department was awarded a $1.6 million Research Training Group grant from NSF for "Number Theory and Algebraic Geometry at Wisconsin". This grant is a part of the NSF Initiative to enhance the mathematical sciences workforce in the 21st century. In particular, it will provide support for graduate, undergraduate students, and postdoctoral fellows. Professor **Ken Ono** is PI for this grant and Associate Professor **Jordan Ellenberg** is Co-PI.

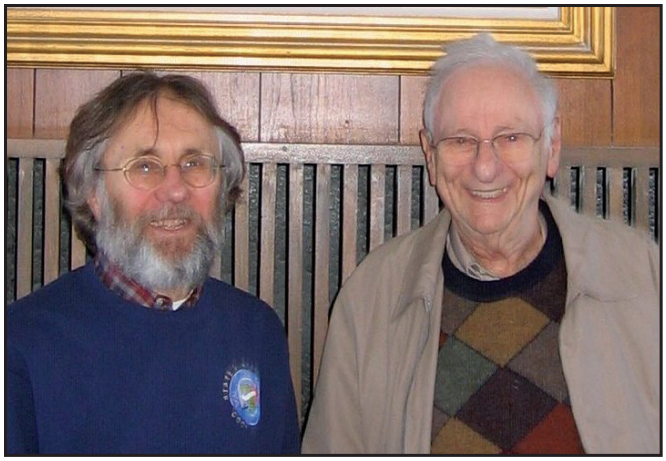
Ken Ono has been appointed the Managing Editor of the Proceedings of the American Mathematical Society.

Conferences

Conference on Character Theory of Finite Groups in honor of **Martin Isaacs** was held at the Universitat de Valencia (Spain) on June 3-June 5, 2009. The organizing committee members were M. Lewis, G. Navarro, D. Passman, and T. Wolf. The local organizer was L. Sanus. The event hosted lectures by the leading experts in the field and attracted many young mathematicians. Marty received his PhD in 1964 from Harvard and was at UW since 1969, for forty years! His research in Algebra and in particular Group Theory was recognized by many prestigious awards, e.g., Sloan Research Fellowship (1971). Marty has numerous publications and several graduate and undergraduate texts. His excellent teaching was recognized by a UW-Madison distinguished teaching award in 1985. Many know Marty as the director of the annual Wisconsin Mathematics, Engineering and Science Talent Search. Congratulations to Marty!

The Workshop on Effective Randomness was held at UW Madison from May 27–31, 2009. It was the second workshop of the Focused Research Group in Algorithmic Randomness, which includes investigators at 12 universities. Organized by J. Miller and S. Lempp, the workshop brought together a diverse group of researchers interested in effective randomness. It featured talks by mathematical logicians, theoretical computer scientists, and geometric measure theorists. The speakers included leaders in the field of effective randomness as well as promising young researchers. One of the four graduate student speakers was Dan Turetsky of UW Madison, who answered a question of Jack Lutz. André Nies, who recently published a monograph on "Computability and Randomness", gave two short tutorials.

Special Lectures



LAA Lecture. Alan Hoffman of the IBM T.J. Watson Research Center, who in 1968 was the first editor-in-chief of the journal Linear Algebra and its Applications (LAA), was the 2009 LAA Lecturer. Alan visited the UW during the week of April 20, 2009 and gave a seminar and colloquium. The seminar talk was entitled MY LOST THEOREMS. In this talk, Alan remarked that there are many very interesting theorems about properties of the eigenvalues of symmetric (0,1) matrices (eigenvalues of graphs) and of the eigenvalues of matrices where all entries are (1,-1) or (1,0,-1). More than thirty years ago, he and Peter Joffe raised the general question: Let S be a given finite set of numbers. Is there anything interesting to say about eigenvalues or singular values of the class of matrices all of whose entries are in S? An abstract is the only thing they published (this abstract is the last entry in Selected Papers of Alan Hoffman (World Scientific Publishing Company, 2003, C. Michelli editor)). Many years have passed since that abstract was published, and Alan said that he is unable to reconstruct the proofs of some of the stated theorems, whence the title of his talk. The title of his colloquium was LATTICE POLYHEDRA, GENERALIZED MAX FLOW AND A PROVOCATIVE GREEDY ALGORITHM. Alan discussed two famous theorems/algorithms in polyhedral combinatorics: the max flow - min cut theorem and the shortest path - max cut packing (the theory behind Dijkstra's shortest path algorithm). In his long and distinguished career Alan proved generalizations of these results and discovered connections between them. He also discussed a not well known greedy algorithm for certain linear programming problems which suggests that further generalizations are possible but, as he related, "I have no idea how to formulate the potential generalizations."

The **Spring 2009 Distinguished Lecture Series** were delivered by **Emmanuel Candes** from Caltech. The titles were: ``L1-magic: An introductory lecture", "The amazing power of convex relaxations: the surprising story of compressive sensing", and "The amazing power of convex relaxations: the surprising story of matrix completion". The lectures were very interesting and accessible, perhaps due to an easy but rigorous style of presentation and to the subject itself. The problems considered are among the most interesting recent advances in the subject of data processing and sampling theory. Candes became interested in the subject as a result of his collaboration with UW faculty (from Math and from the Medical School). The research by Candes (who is now at Stanford) was distinguished by many awards: e.g., Sloan Research Fellowship, Vasil Popov Prize in Approximation Theory, Alan T. Waterman Award. In his work, he employs powerful analytic and probabilistic tools for handling important problems in data representation and sensing.

In fall 2009 **Shouwu Zhang** was the Distinguished Lecture Series speaker. He is a Professor of Mathematics at the Columbia University and L.-K. Hua Chair Professor, Chinese Academy of Sciences. He is well-known for his vast generalization of the deep and beautiful Gross-Zagier formula, sometimes called the Gross-Zagier-Zhang formula, and for his proof of the Bogomolov conjecture in arithmetic geometry. Shouwu

Zhang has numerous awards: e.g., an invitation to the ICM in Berlin, Morningside Gold Medal of Mathematics, Clay Foundation and Guggenheim Fellowship. Professor Zhang gave three lectures; the first one was accessible to a general audience and the others were more advanced.

Persi Diaconis of the Math and Statistics Departments of Stanford University gave this year's Physical Sciences Division Hilldale lecture. Diaconis, who was nominated for the Hilldale lectureship by the U.W. Math Department, has an interesting and unusual biography. He ran away from home and school at age 14 in order to become a magician, and under the tutelage of famed sleight-of-hand expert Dai Vernon, Diaconis became a master of card manipulation. His interest in cards led Diaconis to want to learn probability theory, which necessitated his return to school to learn the necessary prerequisites. Diaconis' lecture in Van Vleck was titled "From Magic to Math and Back". He began his presentation by performing a card trick which did not involve sleight-of-hand, but instead was based on a mathematical idea: de Bruijn sequences. When Diaconis explained the underlying principle of the trick, it seemed less magical, but what remained amazing was that Diaconis invented this trick when he was a teenager, and before he studied math. After his explanation, Diaconis went on to discuss generalizations of de Bruijn sequences and some of their applications. Following the lecture, there was a very well attended catered reception on the 9th floor of Van Vleck.

The 2009 Wolfgang Wasow Lecture was given by **Michael Crandall**, Professor Emeritus at the University of California-Santa Barbara. The title of his talk was "Absolutely minimizing functions, the infinity Laplacian, and all that." Mike, a member of our Department and the Mathematics Research Center from 1974-1990, was the Einer Hille Professor here. Among his many honors are the Steele Prize of the American Mathematical society, elected membership in the American Academy of Arts and Sciences, and an honorary doctorate from the University of Paris-Dauphine. His paper "User's guide to viscosity solutions of second order PDE's" (BAMS, 1992), joint with H. Ishii and P.L. Lions, has been the most cited journal article in the AMS citation database since 2003.

Other News

The monograph "Lagrangian Intersection Floer Theory" by Yong-Geun Oh (jointly with Fukaya, Ohta, and Ono) was published in the AMS/IP Advanced Math Series, vol 46. Yong-Geun was on leave from Madison for this Fall semester to visit National Institute for Mathematical Sciences in Korea as a Visiting Chair Professor to run a thematic program on ``Symplectic Geometry and Mirror Symmetry". He also organized two conferences ``Symplectic, contact and low dimensional topology" and ``Mirror symmetry and Gromov-Witten theory".

Steffen Lempp was on sabbatical at Victoria University of Wellington, New Zealand, in the fall working with Rod Downey and other logicians there. He took along his student Dan Turetsky on a UW Grad School-funded RAship and Dan impressed Downey so much that he was offered a 2-year postdoctoral position at VUW starting this coming (northern) fall.

Timo Seppalainen was invited to become Chief Editor of the journal Electronic Communications in Probability for the 3-year term 2009-2011. ECP and its sister journal Electronic Journal of Probability were started in 1996 to provide high-quality alternatives to commercial journals. ECP and EJP have since become firmly established as leading journals in probability. They are affiliated with the Institute of Mathematical Statistics, the main international professional society for probabilists. Timo also gave an invited short course "Fluctuations for particle systems in one dimension" at the 13th Brazilian School of Probability in Maresias, Sao Paulo, on August 2-8, 2009, and again on August 18-20 at the University of Helsinki, Finland.

Benedek Valko and **Alexandru Ionescu** were invited to be speakers at the International Congress of Mathematical Physics in Prague (summer 2009). The Congress is the most important event in Mathematical Physics. It takes place every third year.

Research by **Jean-Luc Thiffeault** was featured in the article "Fish swishing mixes the ocean" posted on the website from the Institute of Physics.

Ken Ono gave the C. S. Subramaniam Memorial Lecture in December 2009 at the Indian Institute of Technology in Madras. This lecture celebrated the 100th anniversary of the birth of C. S. Subramaniam, who was a one of the authors of the Indian Constitution and a great supporter of science in India. Ken will also give the UCLA Department of Mathematics Distinguished Lecture Series in April 2010. There will be three lectures on number theory at the interface of physics and combinatorics.

Kathrin Bringmann, a former Van Vleck Assistant Professor (2004-2007) who is working in Number Theory, has been awarded the 2009 Alfred Krupp Research Prize. The board of curators of the Alfried Krupp von Bohlen und Halbach Foundation awards an annual prize to scientists of the younger generation working in the natural sciences and engineering. The aim of the prize is to improve the scope and research opportunities available to professors of C3 rank by providing research and equipment funding to the tune of 1 million Euros. Kathrin, who has positions at both the University of Minnesota (Twin Cities) and the University of Cologne, is just the second mathematician to ever win the prize. She also was awarded the 2009 SASTRA Ramanujan Prize. This annual prize, which was established in 2005, is for outstanding contributions to areas of mathematics influenced by the genius Srinivasa Ramanujan (1887-1920). The age limit for the prize has been set at 32 because Ramanujan achieved so much in his brief life of 32 years. The $10,000 prize was awarded on Dec 22, 2009, during an International Conference on Number Theory at SASTRA University in Kumbakonam, India, Ramanujan's hometown.

Shi Jin was a co-chair of a quarter long program on "Quantum and Kinetic Transport: Analysis, Computations, and New Applications" at the Institute for Pure and Applied Mathematics (IPAM) at UCLA, March-June 2009. This program included four workshops and one tutorial at IPAM, and a culminating workshop at Lake Arrowhead. Shi also gave a tutorial course in this program.

Amanda Folsom, an NSF Van Vleck Assistant Professor working with Professor Ono in Number Theory, has accepted a tenure track position at Rutgers University in New Brunswick. **Riad Masri**, a Van Vleck Assistant Professor working with Professors Ono and Yang in Number Theory, has accepted a tenure track position at Texas A&M University.

Paul Milewski was on sabbatical leave for the academic year at the Ecole Normale Supérieure in France. Collaborating with Fréderic Dias, they have developed new fully nonlinear models for water waves in shallow water. He also spent a month in Muizenberg, near Cape Town, South Africa, at the African Institute for Mathematical Sciences (AIMS) teaching a graduate course in geophysical waves to their post-graduate students. These are top students, selected from all African nations to take a year of courses offered by faculty invited from across the world. "This was an absolutely wonderful experience, both from a human and intellectual perspective. The students are given a wonderful opportunity and eager to learn. I learned a lot also: where else can you have in the same class 20 students from 20 cultures who speak 20 languages!"

Bart Kastermans is now an Assistant Professor at University of Colorado – Boulder. He was a Van Vleck Assistant Professor working with Steffen Lempp in Logic.

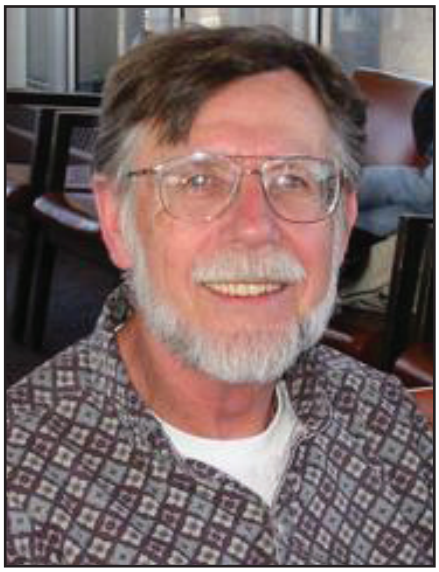
The "Math And...." seminar had an active 2009. In the spring, thanks to generous funding from WARF, the Graduate School, and the Morgridge Institute, the "Math And..." seminar was part of **MALBEC** ("Math, Algorithms, Learning, Brains, Engineering, Computing"), an interdisciplinary seminar that explored the boundaries between machine learning and human cognition, filtered through a mathematical sensibility. **David Balduzzi**, a Chicago-trained algebraic geometer now researching at the UW psychiatry department, talked about mathematical models of consciousness; **Michael Coen** from computer sciences and biostatistics explained the theory of clustering and the syntax of animal speech; **Jerry Zhu** from computer sciences explained the ways in which monkeys are better learners than graduate students; and **Partha Niyogi** (computer science, U Chicago) talked about his work with topologist Stephen Smale on geometric learning algorithms. In the fall, we went back to our usual once-a-semester format, where each lecture is either a non-mathematician talking about math, or a mathematician talking about something other than math. This time we had **Arielle Saiber**, a scholar of Italian literature from Bowdoin College, who told an overflow crowd the gripping story of the battle for the cubic formula in Renaissance Italy. Niccolo Tartaglia, the possessor of the secret formula, wrote it down in terza rima, the poetic form favored by Dante. Saiber explained why poetry and mathematics were natural partners in the minds of the Italian intellectuals of the time.

REU

Ken Ono's annual summer REU in number theory most recently spanned the summer months of July and August 2009. Eight undergraduates and three advanced high school students from places such as Harvard, Princeton, MIT, Columbia, Bard, Phillips Andover, Maryland, and Bryn Mawr, were selected to participate after the usual application process, and spent their summer living in Adams Hall alongside Lake Mendota. Historically, Ono's REU participants have gone on to win the Morgan Prize and Schafer Prize, have been named Goldwater Scholars, Churchill Fellows, Putnam Fellows, NSF/NDSEG Graduate Fellows, and have continued on to top graduate schools. After some introductory lectures, reading, exercises, and studying, students divided into four research groups, led by **Ken Ono**, and also Van Vleck Assistant Professors **Amanda Folsom** and **Riad Masri**. Five papers were written in total, each submitted for publication, in the areas of "L-functions and elliptic curves," "modular forms, probability, and continued fractions," and "twisted Kloosterman sums and modular forms." Two of the groups (including two present first year UW graduate students **Evan Dummit** and **Amanda Hittson**) proved recent conjectures of R. Evans and N. Katz on twisted Kloosterman sheaf sums and coefficients of modular forms. A third group investigated the non-vanishing of central values of L-functions of canonical families of Hecke characters, and motivated by the Birch and Swinnerton-Dyer conjecture and work of Mazur and Rubin, obtained results on the 2-Selmer groups of quadratic twists of elliptic curves. The fourth group generalized a prior result, producing "modular continued fractions" (Rogers-Ramanujan e.g.) that give rise to certain probability models, and as a consequence of modularity, obtained certain probabilistic identities. Their results and more information can be found here: http://www.math.wisc.edu/~ono/reu09.html

Retirements

Wayne Dickey: Ronald Wayne Dickey, known as Wayne in his mathematical life, retired effective January 2009 after 41 years of service to the UW-Madison Department of Mathematics. Born in California, Wayne received his B.A. in Physics from UCLA in 1959 then joined the Douglas Aircraft Company in Long Beach CA where he worked for about a year and a half before going on to graduate school at New York University's Courant Institute for Mathematical Sciences. In New York, he quickly earned his M.S. in 1962 then his Ph.D. in 1965. His PhD advisor was J.J. Stoker and his main research area was nonlinear elasticity, the study of stresses and strains in structures and materials. Wayne was a postdoctoral fellow at the Courant institute from 1965 to 1967. He joined the UW mathematics department as an Assistant Professor in 1967, was promoted to Associate Professor in 1969 then to Professor in 1972, after spending a year as a Senior Visiting Fellow at the University of Newcastle in the UK. He has published many research articles on his mathematical analyses of the dynamics and bifurcations of elastic structures such as strings, membranes and shells. Wayne was an avid downhill skier but discovered that Madison, Wisconsin, was far from the mountains, especially in 1967 when Interstate 80 was far from completed. Adapting to his new environment, Wayne taught himself how to sail on Lake Mendota. He then discovered that Lake Mendota is fairly small, so he moved on to Green Bay and Lake Michigan. Eventually, he kept going all the way to the Atlantic Ocean. In the summer, he is typically difficult to find in a thick fog off the coast of Maine.



Robert Wilson: Bob Wilson retired last year. He received his MS and PhD in Mathematics here at UW in 1963 and 1969, respectively. Upon his graduation, Bob was an Instructor and Assistant Professor at UW for six years and then a Professor of Math and Computer Science at Washington and Lee University, 1975-1984. Then, after working for several years in the industry (Silicon Valley), he returned to UW in 1990 as Visiting Professor. In 1992, Bob became Professor of Mathematics. His research interests are in Non-Associative Algebra and Combinatorics. In recent years Bob has been focused on mathematics education, specifically how "culture" affects learning of mathematics. The service that Bob provided to the Department and to UW during his career is outstanding. He was actively involved in promoting Mathematics and improving teaching at all levels: middle school, high-school, and College. Bob also was a superb teacher himself (Isthmus once selected him as one of five best teachers at UW). He was beloved by his students and as Sheri Pittman cited one of them at the retirement party "he is like Santa Claus but teaches Math". In 2007, Bob received the award "Outstanding Wisconsin Mathematics Professor" for his excellence in teaching and service to UW. His colleagues remember him as always being very friendly and helpful person with interests as broad as computers, music, and even fast cars!

In Appreciation of Bob Wilson (*by Joel Robbin*)

In my early years in our department I heard Charlie Conley say that the secret to handling administration was to do a bad job. "Then they don't ask you to do it." I am not proud to admit that through most of my career I heeded this advice; fortunately not all of my colleagues followed suit. Among those who carried more than their fair share of the burden, Bob Wilson stands out. His work in administration was, in my opinion, under appreciated and the value of this kind of work to the department is undervalued.

Conquering the arcane world of ISIS, navigating the administration, and managing the sensitive issues of undergraduate graduate faculty relations were not Bob's only achievements. He is one of our best teachers. In a year when Isthmus named the five best and five worst teachers at UW Madison (with information gleaned from ratemyprofessor.com) four of the five worst were from our department, and Bob was one of the five best. In an era when the United States is demonstrably weaker than most other nations in the mathematical education of its children and when the response of academia seems to be open warfare between departments of mathematics and departments of mathematics education, Bob is a calm liaison. (Yes Bob, those folks really do have something to contribute.)

Finally let me emphasize the joy of having Bob as a colleague. Back when the world was young I frequently consulted Bob on vital issues like personal computers (but I still prefer Apple to Microsoft), automobiles, and stereos. I shall be forever grateful to Bob for locating the lyrics to "April in Fairbanks". Thanks to Google, this would be an easy task today, but I'll wager that said lyrics are not to be found in the library of UW's School of Music.

2009 PhD

Addington, Nicholas (Caldararu)	Postdoctoral fellow, Imperial College-London
Andrejko, Erik (Kunen)	
Bae, Myoungjean (Feldman)	Boas Assistant Professorship, Northwestern University
Berliner, Adam (Brualdi)	Assistant Professor of Mathematics, St. Olaf College
Deatt, Louis (Brualdi)	Postdoctoral fellow, University of Victoria
Ellison, Ben (Ruitenburg of Marquette University and Lempp)	Associate Lecturer, UW-Richland Center
Hua, Zheng (Borisov)	Postdoctoral position at University of British Columbia
Huang, Hongnian (Chen)	Postdoc at UQuebec at Montreal and McGill University
Joseph, Mathew (Seppalainen)	Postdoctoral position at University of Utah
Kim, Hanjun (Borisov)	
Kumar, Rohini (Seppalainen)	Postdoctoral position at UC-Santa Barbara
McGinn, Dan (Ruitenburg of Marquette University and Lempp)	finishing MS at UW-Madison in Math Education
Milovich, David (Kunen)	Assistant Professor, Texas A&M International University
Nover, Harris (Boston)	Center for Communications Research (La Jolla)
Otto, Ben (Isaacs)	Visiting Assistant Professor, Bowling Green State University
Shi, Yingzhe (Jin)	Assistant Professor, Central University of Finance and Economics, China
Turkelli, Seyfi (Ellenberg)	Postdoctoral fellow at University of Georgia-Athens
Zhu, Keya (Ionescu)	Lecturer, University of Pennsylvania

Graduate student awards

L&S 2009 Teaching Fellows: Christelle Vincent and Nicos Georgiou.

2008-2009 Math Department TA awards: Marc Conrad, Michael Dabkowski, Zajj Daugherty, Seth Meyer, Ekin Ozman, Gabriel Pretel, Loizos Solomou, Annette Spyker, Seyfi Turkelli.

Hirschfelder award: Ekin Ozman and Julie Simons

Nohel award: Myoungjean Bae and Mark Remmel

Excellence in Research award: Nicholas Addington, David Milovich, and Michael Woodbury

Undergraduate student awards

Mark Ingraham Scholarships: D. Lecoanet and T. Elgindi

Dowling Scholarship: A. Bolanowski

Violet Higgitt Frank Scholarships: R. Stoehr and J. Malinowski

Cady Fellowships: C. Brumitt, T. Anderson, and J. Bohn

Creighton Buck Prize: A. Furger

Young Prize: L. Rolen

Wisconsin Math Talent search honors day

On May 1, 2009 the winners of 2008-09 Talent search among Wisconsin High School students were celebrated. Jordan Ellenberg (UW Math) gave a lecture "Packing Spheres and Correcting Errors" and John Karl Scholz (UW Economics) talked about "New (Old) Perspective on Financial Planning for Retirement". Then, after lunch and presentation of awards, the participants took a tour in geology museum of UW-Madison. Students honored for achievements on talent search problems are: Walter Cai, Ritankar Das, Albert Gnadt, Edward Hou, Amy Hua, Anthony Kirckof, Alex Knoespel, Suhas Kodali, Gergo Kovacs, Killian Kvalvik, Thomas Morgan, Honkai Pan, Benjamin Seeger, Abraham Shin, Kyle Stankowski, Minh-Tam Trinh, Lucy Wang, Peter Wear, Iris Xu, Yang Yu, Xiaoqin Zhou. The winner of the prestigious Van Vleck scholarship was Peter Wear from Madison West High School.

Above: Peter Wear

At Left: Top: Anthony Kirckof, Walter Cai, Albert Gnadt, Kyle Stankowski, Peter Wear, Gergo Kovacs; Middle: Suhak Kodali, Thomas Morgan, Ben Seeger, Alex Knoespel, Yang Yu, Abraham Shin, Killian Kvalvik; Front: Amy Hua, Xiaoqin Zhou, Ritankar Das, Hongkai Pan

Alumni news:

Matt Boylan (PhD 2006, Ono) has been promoted to Associate Professor with tenure at the University of South Carolina.

Jayce Getz, (PhD2007, Ono), and presently at Princeton and IAS in a postdoctoral position, has accepted a tenure-track assistant professorship at McGill University.

Karl Mahlburg (PhD 2006, Ono), now a postdoc at Princeton, has been awarded a Humboldt Fellowship to conduct research at the University of Cologne.

Maria Monks, a former REU student of **Ken Ono** (she is an undergrad at MIT) has been awarded Honorable Mention in the 2009 Morgan Prize competition (awarded to the top undergraduate research student in the country). Last year she won the Schafer Prize for the top undergraduate woman.

Bryan Shader (PhD 1990, Brualdi) has been awarded the University of Wyoming's highest academic award, the Duke Humphrey Award.

Gautam Bharali (PhD 2002, A. Nagel) was awarded an INSA medal for young scientists. Bharali is currently an assistant professor in the Mathematics Department of Indian Institute if Technology.

Dilip Raghavan (PhD 2008 with advisors **Kunen** and **Kastermans**) received the prestigious Sacks Prize for best thesis in Logic.

The board of directors of electric vehicle pioneer **ZAP** unanimously elected **Priscilla M. Lu, Ph.D.** as Chair of its Board of Directors. Dr. Lu is a 30-year telecommunications and networking executive. She received her BS in Math (UW) in 1975 and MS in CS in 1976.

Asher Kach (PhD 2007 with **Steffen Lempp**) is on leave from a postdoc at UConn-Storrs to visit Victoria University of Wellington on a Marsden Grant postdoc.

Annual Wisconsin Reunion and Reception

The annual Wisconsin Reunion was held at the AMS Annual Meeting in San Francisco on January 14, 2010. A large group of former Wisconsin PhDs, retirees, and some others with UW-Madison math connections, gathered to renew friendships and catch up with the latest news about UW. As usual refreshments and drinks were enjoyed by all. A photo from the reunion, taken by Shi Jin, is included here.

Madison Undergraduate Initiative

In view of the University budget problems, our Chancellor Biddy Martin announced last year the Madison Initiative for Undergraduates (MIU). This initiative, endorsed by the Regents, increases the differential tuition charged to students with family income above $80,000 during four consecutive years. Donors will be matching the amount the University will be obtaining through this process, and the total revenue will be used to improve undergraduate teaching and services and to increase scholarships for lower income students. In particular, the initiative aims to give students increased access to faculty, to streamline gateways courses and services, and to improve the Education of biology students. The Initiative has a number of faculty lines attached to it, and those lines and other resources are being given to departments through an open competition. Over 110 MIU proposals have been presented to the MIU committee for consideration this year. As a service Department, the Mathematics Department is deeply involved in undergraduate education and, as a result, we put forward two proposals:

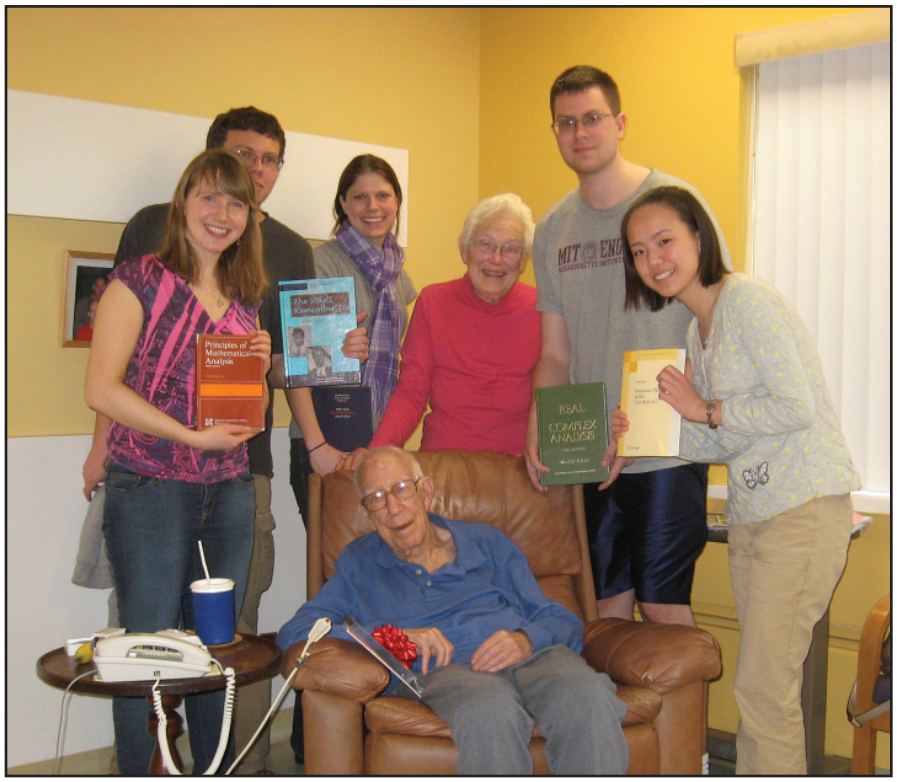
The first proposal is a complete re-thinking of the way we teach Calculus to the Life Sciences and related fields. Our proposal "Mathematics for Biological and Biophysical Sciences" proposes an innovative sequence of 2 courses that will include a real-life application oriented computational lab, integrative sections led by both TA and faculty and a modular format for the second course. The modular format is designed to streamline the delivery of useful mathematical knowledge to these students and to adapt the content to the wide variety of targeted majors. The course will have three modules, to be chosen from a larger number of them, and each major will be able to customize the class to its own needs. The computer lab accommodates variations in student's learning preferences, and enhances their ability to learn independently. If funded, the development of these courses will involve a campus-wide group of faculty (we have 11 campus partners from 9 different departments/units) and consultation with students.

Our second proposal is a joint enterprise with the School of Engineering, DoIt and the Library system. The proposal "Wisconsin Center for E-learning" proposes the establishment of a Wisconsin Center for E-Learning (WCEL), a 21st century approach to learning that combines deliberate choices of physical environment, including both computers and networks and multi-use spaces. On the one hand the center aims to facilitate and support the creation of new types of undergraduate courses and pedagogies (e.g., those using computers to provide immediate learning progress feedback and build fundamental skills competencies; those seeking to provide international connections through chat software; those seeking to accelerate students in their degree progress; and so on). On the other hand, the center aims at alleviating some of the existing problems with undergraduate instruction, for example, by making students more self-reliant in their learning and by freeing valuable time that TAs and lecturers currently employ grading routine homework, in favor of more interaction with students. If funded, the Math Department plans to incorporate its pre-Calculus courses to the center.

More information on the MIU plan can be found at
http://madisoninititative.wisc.edu

2009 Incoming Graduate Students

Ana Berrizbeitia	University of Texas at Austin
Hesam Dashti	University of Tehran
Evangelos Dimou	University of Athens
Evan Dummit	California Institute of Technology
Marton Hablicsek	Eotvos Lorand University
Amanda Hittson	Bryn Mawr College
Yueke Hu	Tsinghua University
Leland Jefferis	Seattle University
Silas Johnson	Stanford University
Qin Li	Tsinghua University
Timur Nezhmetdinov	Lehigh University
Devon O'Rourke	Evergreen State College
Aaron Peterson	Luther College
Elizabeth Skubak	Bucknell University
Yun Su	University of Illinois at Chicago
Kai Ho Wong	University of Illinois at Chicago
Chengjian Yao	China University of Science and Technology
Jie Zhao	Peking University
Zhennan Zhou	Jilin University



"The Undergraduate Math Club brought Mary Ellen and Walter Rudin a gift on Valentines Day February 14, 2010 in appreciation of their commitment to Mathematics and to UW-Madison."

Seated: Walter Rudin
Standing from L-R: Tess Anderson, Huck Bennet, Ruth Stoehr, Mary Ellen Rudin, Larry Rolen, and Rosalind Gu."

Department of Mathematics Annual Fund

Please accept my contribution in the amount of $ _____ which is designated for:

UW Foundation Accounts (Department of Mathematics)

- ☐ Department of Mathematics General Fund - serves as the department's "general" account
- ☐ R. Creighton Buck Prize Fund - awards an undergraduate prize for creativity in mathematics.
- ☐ Wallace J. Hilliard Fund - provides support for the Wisconsin Emerging Scholars Program (WES).
- ☐ Elizabeth Hirschfelder Fund - for Graduate Women in Mathematics, Chemistry & Physics.
- ☐ Mark Ingraham Math Scholarship Fund - provides a scholarship for a mathematics major above freshman standing.
- ☐ Mary Ellen Rudin Fellowship Fund - scholarship to support bright and talented female mathematics students.
- ☐ John Nohel Prize in Mathematics - a prize for the best PhD thesis in applied mathematics.
- ☐ Wolfgang Wasow Memorial Lecture Fund - supports a lecture by an eminent mathematician in a distinguished lecture series.
- ☐ Van Vleck Math Talent Search - provides funds for our annual math talent competition.
- ☐ S. C. Kleene Mathematics Library Fund provides mathemetical resources not otherwise available to the Mathematics Community.

For donations to the above funds, please make checks payable to UW Foundation and send to:

University of Wisconsin Foundation
US Bank Lockbox
P.O. box 78807
Madison, WI 53278-0807

All contributions are tax deductible; many corporations have a matching grants program.

Address Correction and Alumni News

Please help us update our database of alumni
PhD alumni - check your listing in our alumni database at:
http://www.math.wisc.edu/oldhome/directories/alumni/
If the information is NOT correct please use this form:
http://www.math.wisc.edu/oldhome/directories/alumni/contact.htm
or send correct information to:
Wisconsin Alumni Association: http://www.uwalumni.com/ or

Serguei Denissov
Department of Mathematics
University of Wisconsin
480 Lincoln Drive
Madison, WI 53706-1388
(denissov@math.wisc.edu)

You can also use this to inform us of your activities for use in the next newsletter.

☐ Check here if new address

Name: _____
Mailing Address: _____
_____
_____
E-mail Address: _____

My News: _____
_____
_____
_____
_____
_____
_____
_____

University of Wisconsin - Madison
Department of Mathematics
480 Lincoln Dr.
Madison, WI 53706-1388

NONPROFIT ORGANIZATION
U.S. POSTAGE PAID
MADISON, WISCONSIN
PERMIT NO. 658

Van Vleck Notes

is published annually by the
Department of Mathematics of the University of Wisconsin-Madison
480 Lincoln Drive, Madison, WI 53706-138
Phone:(608) 263-3054
Fax: (608) 263-8891
Home Page:http://www.math.wisc.edu

Serguei Denissov, editor (denissov@math.wisc.edu)
Yvonne Nagel, technical editor